



## UT2302

Power MOSFET

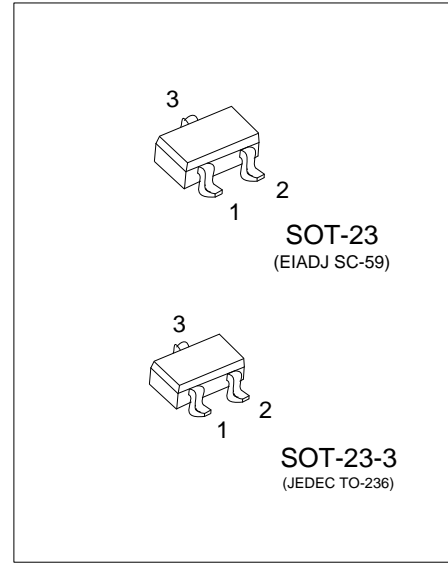
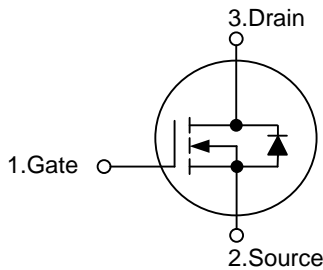
### N-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT2302** is N-channel Power MOSFET, designed with high density cell, with fast switching speed, ultra low on-resistance, and excellent thermal and electrical capabilities.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

#### SYMBOL



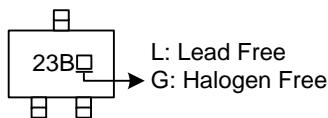
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2302L-AE2-R	UT2302G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2302L-AE3-R	UT2302G-AE3-R	SOT-23	G	S	D	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

<p>UT2302G-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE2: SOT-23-3, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DSS</sub>	20	V
Gate-Source Voltage	V <sub>GSS</sub>	±8	V
Drain Current (Note 1)	Continuous	I <sub>D</sub>	2.4
	Pulsed	I <sub>DM</sub>	10
Power Dissipation	P <sub>D</sub>	1.25	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ <sub>JA</sub>	100	°C/W

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

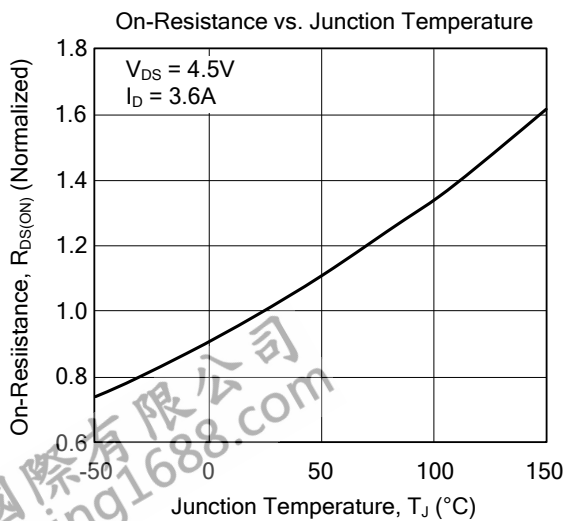
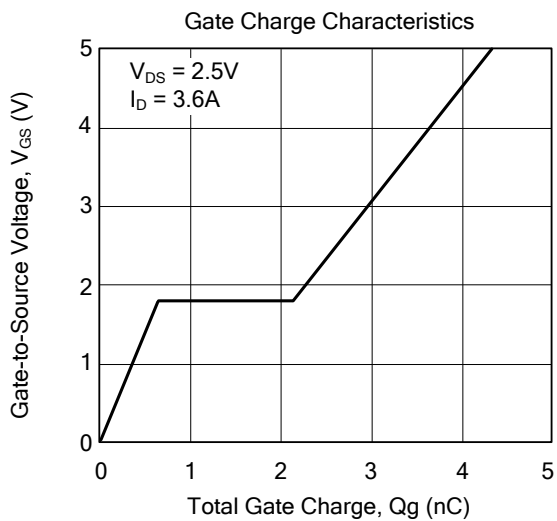
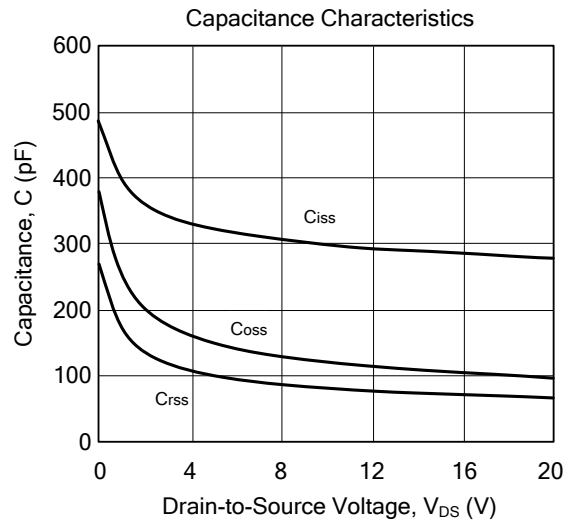
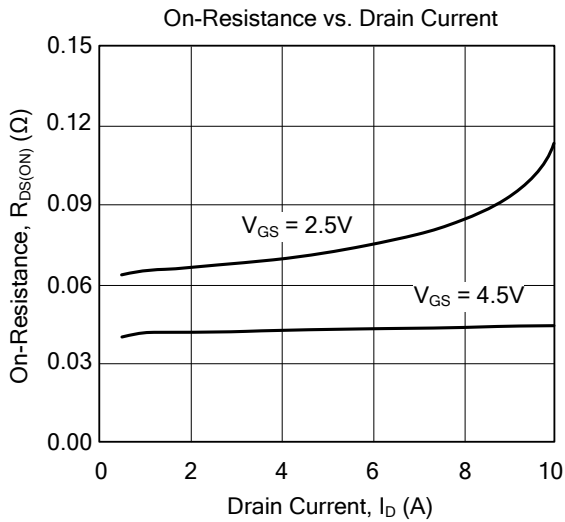
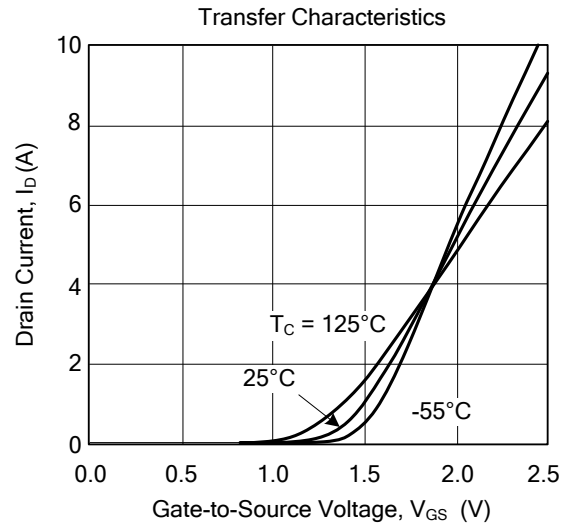
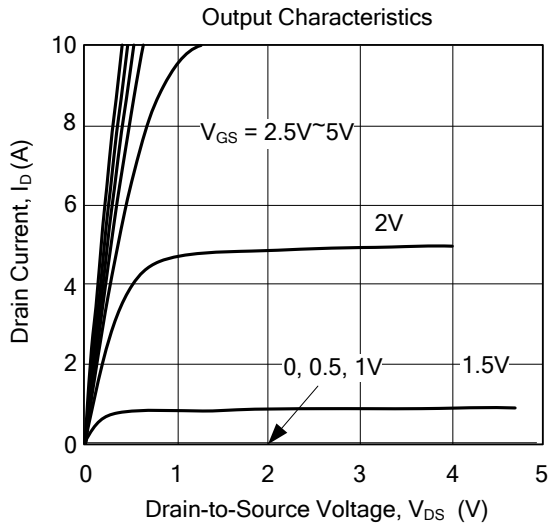
### ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0 V, I <sub>D</sub> =250 μA	20			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =20 V, V <sub>GS</sub> =0 V			1.0	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±8V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	0.45		1.2	V
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5 V, I <sub>D</sub> =7.2 A			50	mΩ
		V <sub>GS</sub> =2.5 V, I <sub>D</sub> =3.1 A		75	95	mΩ
On State Drain Current (Note2)	I <sub>D(ON)</sub>	V <sub>DS</sub> ≥5V, V <sub>GS</sub> =4.5 V	6			A
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =10 V, V <sub>GS</sub> =0V, f=1MHz		450		pF
Output Capacitance	C <sub>OSS</sub>			70		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			43		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5 V, I <sub>D</sub> =3.6 A		5.2	10	nC
Gate-Source Charge	Q <sub>GS</sub>			0.65		nC
Gate-Drain Charge	Q <sub>GD</sub>			1.5		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =10V, R <sub>L</sub> =10 Ω, I <sub>D</sub> =1A, V <sub>GEN</sub> =4.5V, R <sub>G</sub> =6Ω		7	15	ns
Turn-ON Rise Time	t <sub>R</sub>			55	80	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			16	60	ns
Turn-OFF Fall-Time	t <sub>F</sub>			10	25	ns
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>				1.6	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0 V, I <sub>S</sub> =1.0 A	0.76	1.2		V

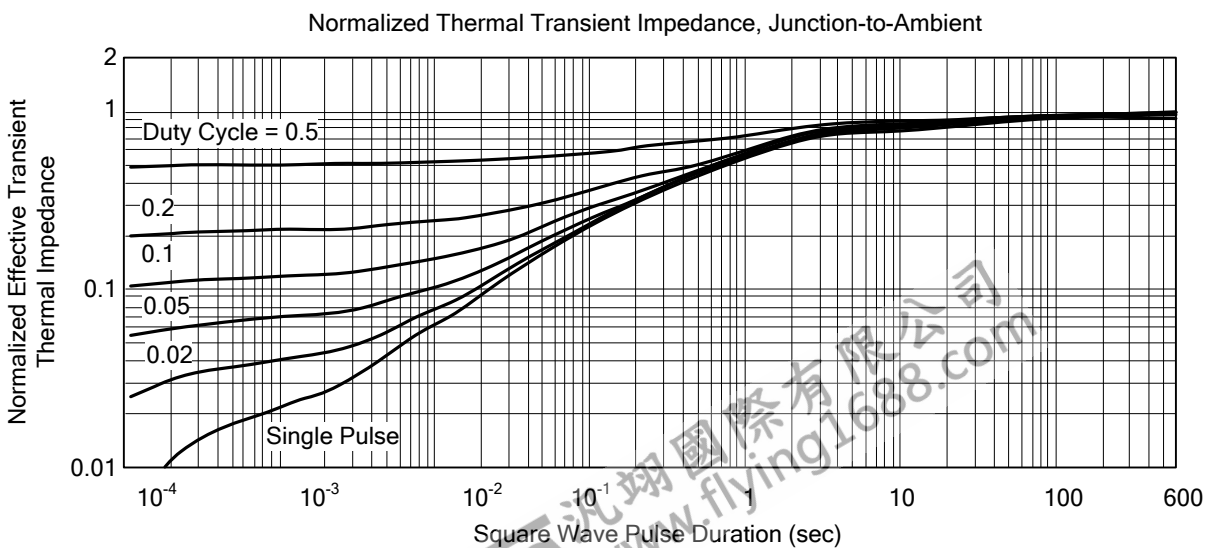
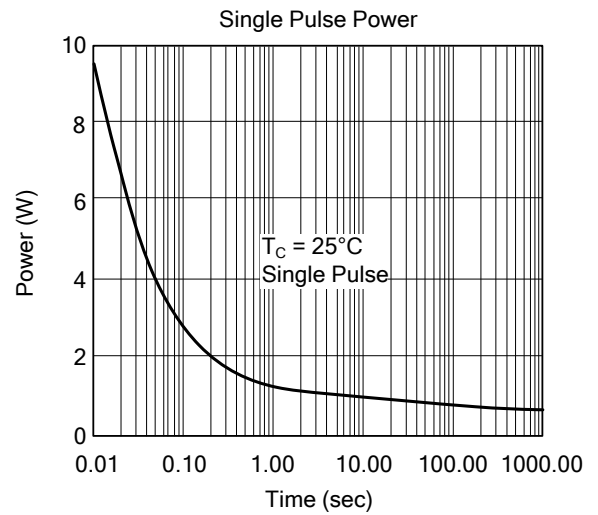
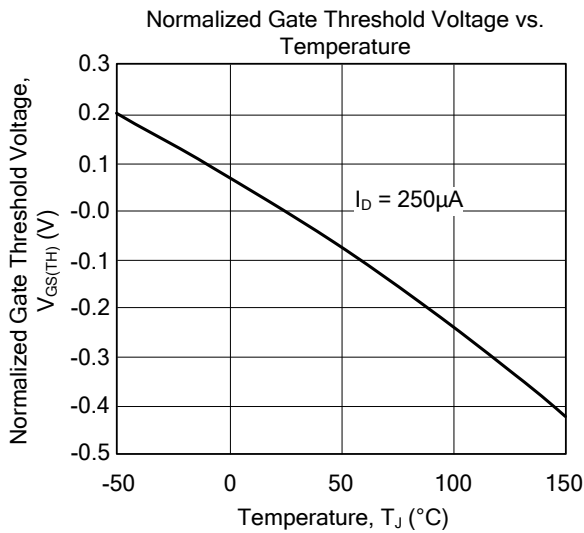
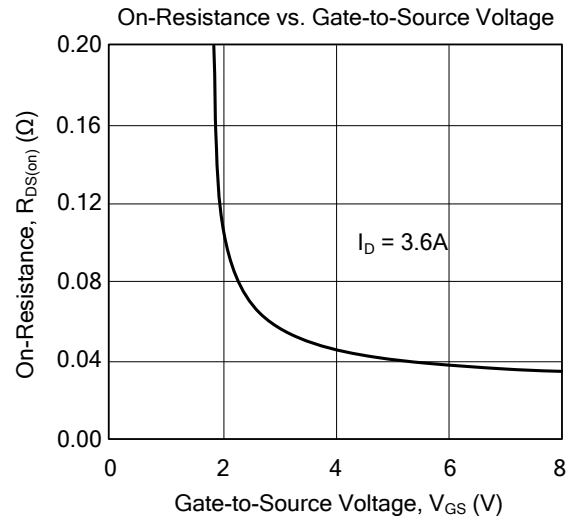
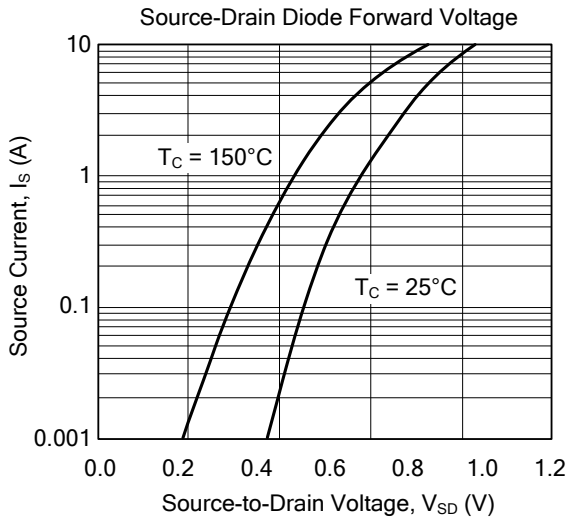
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

2. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%

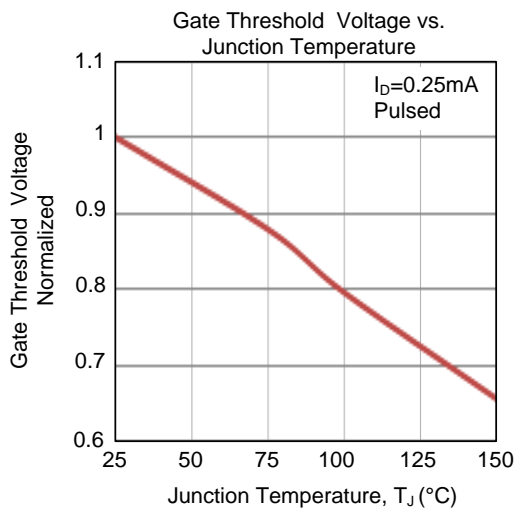
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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